

UNCLASSIFIED
FY 2000 President's Budget Estimates

DATE: February 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205604N
PROJECT TITLE: Tactical Data Links

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1998 ACTUAL	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
P1743 LINK-16 Improvements	2,469	4,421	4,207	4,212	9,665	8,550	8,734	8,922	CONT	CONT
P2126 ATDLS Integration	38,404	44,730	42,459	18,407	13,346	17,003	17,478	19,649	CONT	CONT
TOTAL	40,873	49,151	46,666	22,619	23,011	25,553	26,212	28,571	CONT	CONT

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program element (PE) develops and improves the Navy's tactical data link systems. It includes the LINK-16 Improvements and Advanced Tactical Data Link Systems (ATDLS) Integration programs.

(U) Link-16 Improvements extends LINK-16 technological improvements to existing and developing U.S. Navy data link systems, including LINK-11 and LINK-22. Development of the NATO Improved LINK-Eleven (NILE) project is a major element of this program. The U.S. is the lead technical nation for LINK-22 development for the NILE office. LINK-16 improvements will allow more effective employment of fleet units by increasing the timeliness, accuracy, and content of tactical data transfer.

(U) ATDLS Integration includes current efforts to develop translation tools between Tactical Digital Information Links (TADILS) and integration of the Multifunctional Information Distribution System – Low Volume Terminal (MIDS-LVT) into U.S. Navy platforms. MIDS-LVT is a multinational cooperative development program that will provide selected U.S. Navy ships and space constrained tactical fighter aircraft with LINK-16 capability through the development of a terminal that is functionally identical to the Joint Tactical Information Distribution System (JTIDS) Class II terminal, but, through the use of Very High Speed Integrated Circuit (VHSIC) and Microwave Monolithic Integrated Circuits (MMIC) technology, is one-half the weight and one-third the size of the JTIDS terminal.

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(U) Translation between TADILs will isolate all tactical data link equipment, message standards and protocols from tactical information processors. This will provide a flexible capability for rapidly exchanging tactical information using a single data base for translating various link formats while remaining completely independent of communications equipment and tactical data computing systems. ATDLS will also improve existing computer-to-computer, digital radio communications in the HF and UHF radio frequency bands among Combat Direction System (CDS) equipped ships, submarines, aircraft and shore sites.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

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PROGRAM ELEMENT: 0205604N

PROJECT NUMBER: P1743

PROGRAM ELEMENT TITLE: Tactical Data Links

PROJECT TITLE: Link-16 Improvements

(U) COST (Dollars in Thousands)

PROJECT

NUMBER & TITLE	FY 1998 ACTUAL	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
P1743 LINK-16 Improvements	2,469	4,421	4,207	4,212	9,665	8,550	8,734	8,922	CONT	CONT

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program includes the LINK-22 program and near term improvements to sustain existing LINK-11 systems. Near term LINK-11 improvements include: Mobile Universal Link Translator System (MULTS) upgrade, Common Shipboard Data Terminal Set (CSDTS), and LINK-11 Baseline Freeze message standard work. The LINK-22 program will improve the performance of both LINK-11 and LINK-16 through the combination of the results of the Critical Systems Demonstration (CSD) project and the NATO Improved LINK-11 (NILE) project. LINK-22 will pass TADIL-J data elements beyond the line of sight (HF) using a Time Division Multiple Access (TDMA) protocol and the improved LINK-11 waveform. These projects will allow more effective employment of fleet units by increasing timeliness, accuracy, and content of tactical data transfer.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

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PROGRAM ELEMENT TITLE: Tactical Data Links

PROJECT NUMBER: P1743
PROJECT TITLE: Link-16 Improvements

1. (U) FY 1998 ACCOMPLISHMENTS::

- (U) (\$1,292) Continued design and development of Subphase 2 for the NILE Reference System (NRS).
- (U) (\$1,177) Continued preparing for U.S. implementation of LINK-22 including CDLMS/CSDTS upgrades.

2. (U) FY 1999 PLAN:

- (U) (\$1,136) Continue design and development of Subphase 2 for the NILE Reference System (NRS).
- (U) (\$1,494) Continue Link-22 system development. Link-22 shall receive a NILE SNC Beta software version and shall conduct preliminary performance testing in a laboratory environment. Crypto design and message standards will be evaluated.
- (U) (1,791) Began combined CDLMS/Link 22 program enhancements.

3. (U) FY 2000 PLAN:

- (U) (\$271) Complete design and development of Subphase 2 for the NILE Reference System (NRS).
- (U) (\$500) Commence validation of Link 22 design to ensure interoperability with NILE Reference System (NRS) under NILE In-Service Support Phase MOU.
- (U) (\$1,898) Continue Link-22 system development. Link-22 program shall perform final SNC beta software verification and performance tests. Message standards and Signal Processing Controller functions will be defined for U.S. implementation.
- (U) (\$1,538) Continue combined CDLMS/Link-22 program enhancements. CDLMS/Link-22 specifications/designs will be baselined for final system integration.

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PROGRAM ELEMENT TITLE: Tactical Data Links

PROJECT NUMBER: P1743
PROJECT TITLE: Link-16 Improvements

B. (U) PROGRAM CHANGE SUMMARY:

(U) Funding: FY 1998 decrease of \$50K was due to a \$42K SBIR reduction and \$8K Navy reprogramming for cancelled accounts.
FY 1999 decrease of \$11K was due to congressional adjustments.
FY 2000 decrease of \$59K was due to pricing adjustments.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in Thousands)

NUMBER	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	TO	TOTAL
TITLE	<u>ACTUAL</u>	<u>ESTIMATE</u>	<u>ESTIMATE</u>	<u>ESTIMATE</u>	<u>ESTIMATE</u>	<u>ESTIMATE</u>	<u>ESTIMATE</u>	<u>ESTIMATE</u>	<u>COMPLETE</u>	<u>PROGRAM</u>
(U) OPN Line 2614 ATDLS	14,221	32,885	19,143	16,894	21,335	23,154	33,732	33,018	CONT	CONT

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205604N
PROGRAM ELEMENT TITLE: Tactical Data Links

PROJECT NUMBER: P1743
PROJECT TITLE: Link-16 Improvements

D. (U) ACQUISITION STRATEGY:

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>TO COMPLETE</u>
Program Milestones				
Engineering Milestones				
T&E Milestones			NRS Test 2Q/00	Link-22 DT/OT 1Q/02
Contract Milestones				

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BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205604N

PROJECT NUMBER: P1743

Exhibit R-3 Cost Analysis (page 1)												
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date	Cost To Complete	Total Cost	Target Value of Contract		
NATO Improved Link Eleven	Various	Various	1,022	1,136	Various	771	Various	1,000	3,929	3,929		
LINK-22	WX	SPAWARSYSCTR	1,304	3,285	Various	3,436	Various	Cont.	Cont.	Cont.		
		San Diego, CA										
C2P Improvements	Various	Various	1,576						1,576	1,576		
Subtotal Product Development			3,902	4,421		4,207		Cont.	Cont.	Cont.		
Remarks:												
Support and Management	Various	Various	270	0		0		0	270	270		
Subtotal Support			270	0		0		0	270	270		
Remarks												
Exhibit R-3 Cost Analysis (page 2)												

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PROGRAM ELEMENT: 0205604N

PROJECT NUMBER: P1743

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date	Cost To Complete	Total Cost	Target Value of Contract		
Test and Evaluation	Various	Various	272	0		0		0	272	272		
Subtotal T&E			272	0		0		0	272	272		
Remarks												
Subtotal Management			0	0		0		0	0	0		
Remarks												
Total Cost			4,444	4,421		4,207		Cont.	Cont.	Cont.		
Remarks												

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BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205604N
PROGRAM ELEMENT TITLE: Tactical Data Links

PROJECT NUMBER: P2126
PROJECT TITLE: ATDLS Integration

(U) COST (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1998 ACTUAL	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
P2126 ATDLS Integration	38,404	44,730	42,459	18,407	13,346	17,003	17,478	19,649	CONT	CONT

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The ATDLS Integration program will integrate the Multifunctional Information Distribution System – Low Volume Terminal (MIDS-LVT) LINK-16 terminal into U.S. Navy platforms. This multinational (U.S., France, Germany, Italy, and Spain) cooperative development program was established to design, develop, and deliver low-volume lightweight tactical information system terminals for U.S. and foreign fighter aircraft, helicopters, ships and ground sites. The terminals are designed as a Pre-Planned Product Improvement (P³I) of the Joint Tactical Information Distribution System (JTIDS) Time Division Multiple Access (TDMA) Class II terminal. The goal of the MIDS-LVT program is to produce a terminal that is smaller, lighter, fully compatible with, and as capable as the JTIDS TDMA Class 2 terminals, but suitable for use in platforms that cannot accommodate the bulkier, heavier JTIDS TDMA Class II equipment. This project includes the costs to integrate and test MIDS on the Navy's F/A-18 and selected ship platforms. ATDLS Integration of the MIDS-LVT will also provide selected U.S. Navy and U.S. Marine Corps tactical aircraft, U.S. Navy ships, and U.S. Marine Corps ground units with crypto-secure, jam resistant, low-probability-of-exploitation communication of tactical data and voice at a high data rate. It will have additional capabilities of common grid navigation and automatic relay inherent in the equipment that will enable long range communication and provide jam resistance. The system will be interoperable among all services and NATO/Allied users equipped with MIDS-LVT or JTIDS Class II/IIA.

(U) ATDLS Improvement program also develops new and improved capabilities for Navy TADIL-J users. The Command and Control Processor (C2P) is a software development effort that provides an interface between the TADILs (Link 4A, 11, and 16) and major surface ship Command and Control Systems (Advanced Combat Direction System (ACDS) and AEGIS C&D). Common Data Link Management System (CDLMS) is a Pre-planned Product Improvement (P3I) of the C2P. The CDLMS will provide translation between TADILs and isolate all tactical data link equipment, message standards and protocols from tactical information processors. This will provide a flexible capability for rapidly exchanging tactical information using a single data base for translating various link formats while remaining completely independent of communications equipment and tactical data computing systems.

(U) This project also funds: (1) the development required to accommodate expanded LINK-16 operational capabilities for additional warfare areas, (2) development of automated network management aids, and (3) systems engineering and contractor support efforts.

(U) Additional terminal development costs are funded in program element 0604771D.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

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PROGRAM ELEMENT: 0205604N
PROGRAM ELEMENT TITLE: Tactical Data Links

PROJECT NUMBER: P2126
PROJECT TITLE: ATDLS Integration

1. (U) FY 1998 ACCOMPLISHMENTS:

- (U) (\$24,119) Continued F/A-18 MIDS integration software and aircraft design modifications and testing.
- (U) (\$3,681) Continued TADIL-J System Engineering.
- (U) (\$3,651) Continued Performance Upgrades.
- (U) (\$4,894) Continued MIDS-LVT implementation (MIDS on Ship).
- (U) (\$2,059) Integrate Air Defense Systems Integrator with Global Command and Control System into the USS Mt. Whitney.

2. (U) FY 1999 PLAN:

- (U) (\$31,486) Continue F/A-18 MIDS integration software and aircraft design modifications and testing.
- (U) (\$3,825) Continue TADIL-J System Engineering.
- (U) (\$5,426) Continue Performance Upgrades.
- (U) (\$3,993) Continue MIDS-LVT implementation (MIDS on Ship).

3. (U) FY 2000 PLAN:

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PROGRAM ELEMENT: 0205604N
PROGRAM ELEMENT TITLE: Tactical Data Links

PROJECT NUMBER: P2126
PROJECT TITLE: ATDLS Integration

- (U) (\$34,038) Continue F/A-18 MIDS integration software and aircraft design modifications and testing.
- (U) (\$3,452) Continue TADIL-J System Engineering.
- (U) (\$4,223) Continue Performance Upgrades.
- (U) (\$746) Complete MIDS-LVT implementation (MIDS on Ship).

B. (U) PROGRAM CHANGE SUMMARY:

(U) Funding:

FY 98 increase of \$989K was a result of a Navy reprogramming of \$731K for Satellite TADIL-J, \$2,059K for Air Defense System Integrator, a Navy programmatic adjustment of -\$680K, a SBIR adjustment of -\$798K and Navy reprogramming of -\$323K

FY 99 decrease of \$595K was for congressional adjustments.

FY 00 increase of \$11,014K was due to a Navy adjustment of -\$2,866K for IT-21, and \$14,500 for F/A18 MIDS Integration; and pricing adjustment of -\$620K.

U) Schedule: EMD terminal immaturity has delayed the start of DT-IIA-3 and OT-IIA-2 from 2Q/99 to 3Q/99. This same immaturity will delay DT-IIA-5 and OT-IIA-3 from 4Q/99 to 1Q/00.

(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in Thousands)

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PROGRAM ELEMENT TITLE: Tactical Data Links

PROJECT NUMBER: P2126
PROJECT TITLE: ATDLS Integration

NUMBER TITLE	FY 1998 <u>ACTUAL</u>	FY 1999 <u>ESTIMATE</u>	FY 2000 <u>ESTIMATE</u>	FY 2001 <u>ESTIMATE</u>	FY 2002 <u>ESTIMATE</u>	FY 2003 <u>ESTIMATE</u>	FY 2004 <u>ESTIMATE</u>	FY 2005 <u>ESTIMATE</u>	TO <u>COMPLETE</u>	TOTAL <u>PROGRAM</u>
(U) APN LINE										
(U) # 052500	0	38,272	27,425	70,887	49,941	55,681	55,018	41,353	CONT	CONT
(U) # 054400	794	726	735	742	774	766	805	823	CONT	CONT
(U) RDT&E,DA	53,266	30,512	16,641	16,674	16,975	17,346	17,728	18,118	CONT	CONT
(U) OPN LINE 2614 ATDLS	14,221	32,885	19,143	16,894	21,335	23,154	33,732	33,018	CONT	CONT
(U) SCN	6,500	11,900	19,600	25,500	22,000	24,400	22,000	21,000	CONT	CONT
(U) RELATED RDT&E:										
(U) PE (0604771D P771) – Link 16: Link 16 systems engineering support.										
(U) PE (0604771D P773) - MIDS: MIDS-LVT terminal development.										

D. (U) ACQUISITION STRATEGY:

<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>TO COMPLETE</u>
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PROGRAM ELEMENT TITLE: Tactical Data Links

PROJECT NUMBER: P2126
PROJECT TITLE: ATDLS Integration

Program
Milestones

DAB MS III 3Q/00

IOC 1Q/01 Ship

IOC 2Q/03 Air

Engineering
Milestones

T&E
Milestones

OT-IIID2 2/98
DT-IIIC2 6/98

F/A-18 DT-IIA-4 1Q/99
F/A-18 DT-IIA-3 3Q/99
F/A-18 OT-IIA-2 3Q/99

F/A-18 TECHEVAL 1Q/01
F/A-18 OPEVAL 4Q/01

F/A-18 DT-IIA-5 1Q/00
F/A-18 OT-IIA-3 1Q/00

F/A-18 FOT&E 2Q/03

Contract
Milestones

Ship DT/OT-IIB-1 4Q/99

Ship DT/OT-IIB-2 1Q/00

Ship FOT&E 1Q/01

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Exhibit R-3 Cost Analysis (page 1)												
APPROPRIATION: RDT&E,N BUDGET ACTIVITY : 7			PROGRAM ELEMENT: 0205604N					Tactical Data Links				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date	Cost To Complete	Total Cost	Target Value of Contract		
F/A-18 Integration	PD	NAVAIRSYSCOM	71,430	27,000	Various	25,350	Various	18,000	141,780	141,780		
		Pax River, MD										
F/A-18 Integration	WX	NCTSI	0	850	Various	450	Various	Cont.	Cont.	Cont.		
		San Diego, CA										
TADIL-J System Engineering	WX	SPAWARSYSCTR	22,462	1,174	Various	1,872	Various	Cont.	Cont.	TBD		
		San Diego, CA										
TADIL-J System Engineering	WX	NCTSI	502	548	Various	545	Various	Cont.	Cont.	TBD		
		San Diego, CA										
MIDS on Ship	SS/CPIF	GEC Marconi	7,718	1,500	Dec 98			0	9,218	9,218		
		Wayne, NJ										
		N0003996C0094										
Performance Upgrades	WX	SPAWARSYSCOM	3,652	5,426	Various	3,649	Various	0	12,727	12,727		
		San Diego, CA										
MIDS on Ship	Various	Various	41,407	1,693	Various	246	Various	0	43,346	43,346		
Air Defense Systems Integrator	CPFF	Adv Programming	2,059									
		Concepts, TX										
Subtotal Product Development			149,230	38,191		32,112		Cont.	Cont.	Cont.		
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)												
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date	Cost To Complete	Total Cost	Target Value of Contract		
Support and Management	Various	Various	0	957	Various	973	Various	Cont.	Cont.	Cont.		
Subtotal Support			0	957		973		Cont.	Cont.	Cont.		
Remarks												

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Exhibit R-3 Cost Analysis (page 3)											
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
Test and Evaluation	Various	Various	3,580	221	Various	200	Various	961	4,962	4,962	
MIDS T&E	WX	SPAWARSYSCOM	4,549	4,143	Various	8,243	Various	Cont.	Cont.	Cont.	
		San Diego, CA									
MIDS on Ship T&E	WX	SPAWARSYSCO MSan Diego, CA		800	Dec 98	500	Dec 99	0	1,300	1,300	
MIDS Test Assets	SS/CPAF/ IF	MIDSCO Fairfield, NJ	6,594	0	N/A	0	N/A	0	6,594	6,594	
Subtotal T&E			14,723	5,164		8,943		Cont.	Cont.	Cont.	
Remarks											
Project Management											
ATDLS Engineering	RCP	MITRE	606	418	Dec 98	431	Nov 99	Cont.	Cont.	Cont.	
		McLean, VA									
Subtotal Management			606	418		431		Cont.	Cont.	Cont.	
Total Cost			164,559	44,730		42,459		Cont.	Cont.	Cont.	